layer, or includes a different material from the third concave-shaped metal containing layer.

14. A semiconductor device comprising:

a substrate including a first region doped with a first conductivity type impurity and a second region doped with a second conductivity type impurity;

an insulating layer disposed on the substrate and including a first trench in the first region and a second trench in the second region;

a first gate insulating layer disposed in the first trench;

a first metal nitride layer disposed on the first gate insulating layer;

a first concave-shaped metal containing layer disposed on the first metal nitride layer;

a second concave-shaped metal containing layer disposed on the first concave-shaped metal containing layer;

a first filling layer disposed on the second concave-shaped metal containing layer;

a first capping layer disposed on a top surface of the first filling layer, on a top surface of the first concave-shaped metal containing layer, and on a top surface of the second concave-shaped metal containing layer in the first trench and filling the first trench;

a second gate insulating layer disposed in the second trench;

a second metal nitride layer disposed on the second gate insulating layer;

a third concave-shaped metal containing layer disposed on the second metal nitride layer;

a second filling layer disposed on the third concave-shaped metal containing layer; and

a second capping layer disposed on a top surface of the second filling layer and on a top surface of the third concave-shaped metal containing layer in the second trench and filling the second trench,

wherein a bottom surface of the first filling layer is disposed higher than a bottom surface of the second filling layer, and

a top surface of the insulating layer is coplanar with a top surface of the first capping layer and with a top surface of the second capping layer.

15. The semiconductor device of claim **14**, wherein each of the first and second capping layers includes a material having an etching rate different from that of the insulating layer.

16. The semiconductor device of claim **14**, wherein a bottom surface of the second concave-shaped metal containing layer is disposed higher than a bottom surface of the third concave-shaped metal containing layer.

17. The semiconductor device of claim **14**, further comprising a second insulating layer disposed on the insulating layer.

18. A semiconductor device comprising:

a substrate;

a first insulating layer disposed on the substrate and including a trench;

a gate insulating layer disposed in the trench;

a metal nitride layer disposed on the gate insulating layer;

a first concave-shaped metal containing layer disposed on the metal nitride layer, and including a bottom portion, a first sidewall and a second sidewall;

a second concave-shaped metal containing layer disposed on the first concave-shaped metal containing layer;

a filling layer disposed on the second concave-shaped metal containing layer; and

a capping layer disposed on a top surface of the filling layer, on a top surface of the first concave shaped metal containing layer and on a top surface of the second concave-shaped metal containing layer in the trench and filling the trench,

wherein the second concave-shaped metal containing layer is not formed on an upper surface of the first sidewall of the first concave-shaped metal containing layer and not formed on an upper surface of the second sidewall of the first concave-shaped metal containing layer, and

the capping layer includes a material having an etching rate different from that of the first insulating layer.

19. The semiconductor device of claim **18**, wherein the gate insulating layer is disposed on the substrate in the trench.

20. The semiconductor device of claim **18**, wherein the second concave-shaped metal containing layer includes a bottom layer, a first sidewall and a second sidewall.

21. The semiconductor device of claim **20**, wherein the bottom layer of the second concave-shaped metal containing layer is disposed on the bottom layer of the first concave-shaped metal containing layer,

the first sidewall of the second concave-shaped metal containing layer are disposed on the first sidewall of the first second concave-shaped metal containing layer, and

the second sidewall of the second concave-shaped metal containing layer are disposed on the second sidewall of the first second concave-shaped metal containing layer.

22. The semiconductor device of claim **20**, wherein the filling layer fills a space defined by the bottom layer, the first sidewall and the second sidewall of the second concave-shaped metal containing layer.

23. The semiconductor device of claim **18**, further comprising a second insulating layer disposed on the first insulating layer and on the capping layer.

24. The semiconductor device of claim **18**, wherein an upper surface of the filling layer is coplanar with an upper surface of the second concave-shaped metal containing layer.

25. The semiconductor device of claim **18**, wherein an upper surface of the capping layer is coplanar with an upper surface of the first insulating layer.

26. The semiconductor device of claim **18**, wherein the first concave-shaped metal containing layer includes HfAlN, HfSiN, TaAlN, TaSiN, TiAlN or TiSiN.

27. The semiconductor device of claim **18**, wherein the second concave-shaped metal containing layer includes carbide, nitride, silicon nitride or silicide of one selected from the group consisting of Hf, Mo, Ta, Ti and W, or includes platinum (Pt), ruthenium (Ru), iridium oxide (IrO) or ruthenium oxide (RuO).

28. A semiconductor device comprising:

a substrate;

a first insulating layer disposed on the substrate and including a trench;

a gate insulating layer disposed in the trench;

a metal nitride layer disposed on the gate insulating layer;

a first concave-shaped metal containing layer disposed on the metal nitride layer, and including a bottom portion, a first sidewall and a second sidewall;

a second concave-shaped metal containing layer disposed on the first concave-shaped metal containing layer;

a filling layer disposed on the second concave-shaped metal containing layer;

a capping layer disposed on a top surface of the filling layer, on a top surface of the first concave-shaped metal